

Amendments to the Drawings:

The sheets of drawings submitted herewith include changes to sheet 5 (Fig. 5).

Attachments: Replacement Sheet (1)
Annotated Sheet Showing Changes (1)

REMARKS

Summary of the Office Action

In the Office Action dated June 11, 2007, claims 1-19 were pending, of which Claims 1-9 and 12-19 were rejected under 35 U.S.C. § 112, first and second paragraphs, Claims 12-19 were rejected under 35 U.S.C. § 101, and Claims 1-19 were rejected under 35 U.S.C. § 103(a). The Office Action Summary indicates that the specification was objected to by the Examiner, although no section of the Detailed Action addresses the objection.

Summary of the Amendment

Upon entry of this Amendment, Claims 2-5, 7, 13-16, and 18 will have been canceled and new Claims 20-22 will have been added to the application. Accordingly, Claims 1, 6, 8-12, 17, and 19-22 are currently pending, of which Claims 1, 6, 10-12, 17, and 19 are currently amended. The rejections of Claims 1, 6, 8, 9, 12, 17, and 19 under 35 U.S.C. § 112, first and second paragraphs, are respectfully traversed, and responsive remarks are included together with the identification of support in the originally filed disclosure for the amendments to the specification, drawings, and claims provided above. The rejections of Claims 12, 17, and 19 under 35 U.S.C. § 101 are addressed by amendment to the claims. The rejections of Claims 1, 6, 8-12, 17, and 19 under 35 U.S.C. § 103(a) are respectfully traversed, and arguments in support of the traversals are provided below. Applicants believe that the amendments to the specification and drawings rectify whatever concern the Examiner may have had for objecting to the specification.

Rejections of Claims 1, 6, 8, 9, 12, 17, and 19 under 35 U.S.C. § 112, first and second paragraphs, and amendments to the specification, drawings, and claims

Claims 1, 6, 8, 9, 12, 17, and 19 stand rejected under 35 U.S.C. § 112, first and second paragraphs, respectively as allegedly failing to comply with the enablement requirement and as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants respectfully traverse.

At the top of page 4, at end of the rejections under 35 U.S.C. § 112, the Office Action states: “Due to the severity of the 1st and 2nd paragraph rejections, Examiner is rejecting the claims based on the definition in Applicant’s disclosure.” As the Examiner immediately thereafter focused on claims language when rejecting claims under 35 U.S.C. § 101, it appears that the Examiner’s statement was meant to apply to the rejections under 35 U.S.C. § 112. Applicants respectfully submit that it is improper to ignore the language of the claims and instead reject claims based on the description of exemplary embodiments of the present invention provided, for example, in the Summary of the Invention, Figures, and Description of the Preferred Embodiments. Applicants accordingly request that these rejections be withdrawn.

Amendments to Fig. 5

Applicants have amended the flowchart in Fig. 5 to change the brief description of Step S102 from “ACHROMATIC COLOR?” to “ACHROMATIC COLOR PRIOR TO SMOOTHING?”.

Amendments to the Claims

Applicants have amended Claims 1, 6, 10-12, 17, and 19 to more particularly point out and distinctly claim important features of the subject matter which Applicants regard as the invention.

Conclusion regarding the above Amendments, Remarks, and Section 112

Applicants have amended the specification, drawings, and claims both to clarify where enabling support for the claims is found in the disclosure and to more particularly point out and distinctly claim important features of the subject matter which Applicants regard as the invention. All amendments are supported by the originally filed disclosure. No new matter has been added. Applicants respectfully submit that these amendments render moot any possible issue with respect to the pending claims under both the first and second paragraphs of 35 U.S.C. § 112.

Applicants respectfully submit that the originally filed claims met the requirements for patentability under 35 U.S.C. § 112, first and second paragraphs. Applicants accordingly submit that those rejections are improper and respectfully request

that they be withdrawn. Applicants further submit that all currently pending claims, as shown in the above Listing of Claims, meet the requirements of patentability under 35 U.S.C. § 112, first and second paragraphs, and therefore respectfully request that the Examiner indicate as such at the Examiner's earliest convenience.

Rejections of Claims 12, 17, and 19 under 35 U.S.C. § 101

Claims 12, 17, and 19 stand rejected under 35 U.S.C. § 101. Applicants have amended Claims 12, 17, and 19. It is believed that Claims 12, 17, and 19 as amended meet the requirements of 35 U.S.C. § 101, and the Examiner is requested to withdraw the rejections and indicate that the claims are allowable at the Examiner's earliest convenience.

Prior Art Rejections of Claims 1, 6, 8-12, 17, and 19 under 35 U.S.C. § 103(a)

Claims 1, 6, 8-12, 17, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,929,978 to Kanamori et al. (herein KANAMORI). Applicants respectfully traverse.

KANAMORI is substantially unrelated to the claimed subject matter and fails to teach or suggest either any means or any motive for being modified to include all features of the respective claims. KANAMORI is merely concerned with conventional color correction methods. KANAMORI begins by discussing linear and polynomial masking equations to map color density values D to printing density values X of CMY data. A tri-color analysis system is used to generate the color density values D (KANAMORI C4:L53-55). The tri-color analysis system includes a scanner system that yields RGB values and a section for converting the RGB values into the color density values (Dr, Dg, Db) (KANAMORI C4:L35-53). These D space values appear to correspond to that portion of color density data that can actually be produced using a scanner. KANAMORI finds that these methods either don't produce acceptable results (in particular the linear equations, KANAMORI, C5:L38-65) or are complex or difficult to implement (in particular the polynomial equations, KANAMORI, C5:L66 through C6:L3). KANAMORI then describes a method that basically differs from the aforementioned linear and polynomial masking methods "in that the values constituting the table memory used for color correction are not obtained by masking equation computations. Instead,

these values are derived directly from printed color sample data” (KANAMORI, C7:L16-21). This method uses from 500 to more than 700 color patches to generate a corresponding set of color density values (D^{\wedge} values) that (it is believed) are used to construct a mapping from D to D^{\wedge} (KANAMORI, C7:L12-51 and C8:L40-58).

On page 5, the Office Action again indicates that: “Due to the severity of the 112 1st and 2nd paragraph rejections made above, Examiner is rejecting the claims based on the definition in Applicant’s disclosure.” Applicants respectfully submit that it is improper to ignore the language of the claims and instead reject claims based on the description of exemplary embodiments of the present invention provided, for example, in the Summary of the Invention, Figures, and Description of the Preferred Embodiments.

With respect to independent Claim 1 as originally filed, Applicants respectfully note that page 5 of the Office Action makes no reference to any particular portion of the claim. No clear reference to the features recited in Claim 1 is made until page 6 of the Office Action. On page 6, rather than addressing the actual features of Claim 1, the Office Action merely summarizes some of the features and does not discuss others. For example, the feature “in the event that the first color values does not correspond to achromatic color due to the smoothing, adjusting the first color values to provide second color values corresponding to the achromatic color in the color space” recited in Claim 1 does not appear to be discussed in any manner whatsoever. No argument or rationale for how to modify KANAMORI to include this feature was provided, nor was any motive for modifying KANAMORI identified. Applicants accordingly submit that the rejection is improper.

With respect to independent Claims 10 and 12, the Office Action cites additional portions of KANAMORI. For example, the “correction unit” recited in Claim 10 was identified as being disclosed somewhere in Fig. 7 and lines 7-55 of Column 10 of KANAMORI. However, no argument was provided in the Office Action that demonstrates how the claim feature is alleged to read on these nearly 50 lines of KANAMORI, thereby improperly leaving it up to the Applicants to guess as to what position is being taken in the Office Action. Nothing in the referenced lines teaches or suggests the “correction unit” recited in Claim 10.

The rejection of a claim over prior art requires a demonstration that each and every element of the claim is taught by the prior art. Since the present Office Action does not do so, applicants respectfully submit that the rejections of the independent Claims 1, 10, and 12 are improper. Applicants respectfully request that the rejections be withdrawn.

Moreover, independent Claims 1, 10, and 12 include numerous features not taught or suggested by KANAMORI. For instance, KANAMORI fails to teach or suggest: at least the feature “in the event that the first color value does not correspond to achromatic color due to the smoothing and the original color value corresponding to the first color value is achromatic color, adjusting the first color value to provide a second color value corresponding to the achromatic color” recited in Claim 1, at least the feature “a correction unit for adjusting the first color value into a second color value corresponding to achromatic color, in the event that the first color value does not correspond to achromatic color due to the smoothing” recited in Claim 10, and at least the feature “program code for modifying the first color value such that a second achromatic color value is generated for storage in the color correction table” recited in Claim 12.

According to the Office Action, lines 10-25 of column 9 of KANAMORI disclose both smoothing and storing functions. Nothing in lines 10-25 of KANAMORI is seen to suggest any “adjusting” or “modifying”. At best, KANAMORI creates a mapping using a large number of color patches, smoothes the mapping “so more gradual changes in the magnitudes of successively numbered printing data values will occur” (KANAMORI, C9:L10-15) and stores the table in ROM (KANAMORI, C9:L24-25). It is the smoothed values without any adjustment or modification that get stored.

According to the Office Action, a “color correction unit” can be found in Fig. 7 and lines 7-55 of column 10 of KANAMORI. As best Applicants understand it, it appears the Office Action is interpreting this passage of KANAMORI as disclosing the “correction unit for adjusting the first color value into a second color value corresponding to achromatic color” recited in the “device for compiling a color correction table” defined by Claim 10. Applicants respectfully disagree.

As best Applicants understand it, the Office Action is relying on the entire arrangement illustrated in Fig. 7 and discussed in the aforementioned lines, not any

particular component thereof. In those lines, KANAMORI discuss the use of already compiled color correction tables but nothing pertinent to the compilation of a color correction table. In particular, a color image (at line 12) apparently represented as R, G, B values (at line 15) is applied in conventional manner to logarithmic conversion table memory sections 24, 25, 26 to produce color density values Dr, Dg, Db (at lines 16-18), and 5bit portions of the color density values Dr, Dg, Db are supplied in conventional manner to the color correction table memory sections 30, 31, 32, 33 respectively for producing the C, M, Y, K printing values (at lines 18-27) which are then supplied to a printing system for conventional printing (at lines 35-36). Thus, an image is converted to R, G, B, then Dr, Dg, Db, then C, M, Y, K, and then printed.

Further detail is provided in lines 37-51 of column 10, KANAMORI, which disclose that two distinct color correction tables are resident in the color correction table memory section and a one-bit signal is used select between them. The switching occurs not during any table compilation but rather when the already compiled tables are used to convert an image represented as RGB values to CMYK values for printing. Nothing here teaches or suggests anything pertinent to the compilation of either of the tables, just their use.

Moreover, there is no teaching or suggestion of adjusting a first color value into a second color value corresponding to achromatic color. KANAMORI does disclose that one of the tables may emphasize correction in a high lightness region and the other providing correction for darker regions. However, whether something is lighter or darker is not relevant to whether it is achromatic or not achromatic. Colors can be dark, light, or in-between. Achromatic values similarly can be dark, light, or in-between, depending, for example, on the respective amounts of Black and White present. Nothing in KANAMORI even remotely suggests any feature corresponding to “achromatic color” as that phrase is variously used in the claims.

Furthermore, at least the features “in the event that the first color value does not correspond to achromatic color due to the smoothing and the original color value corresponding to the first color value is achromatic color” and “in the event that the first color value does not correspond to achromatic color due to the smoothing” recited respectively in Claims 1 and 10 are clearly not taught by KANAMORI. To the contrary,

KANAMORI teaches that the desirability of smoothing “so that more gradual changes in the magnitudes of successively numbered printing data values will occur” (KANAMORI, C9:L11-13). The smoothed values are stored. In KANAMORI, if an achromatic value is subjected to smoothing to yield a value that is not achromatic, such latter value is stored anyway. KANAMORI apparently doesn’t recognize that the change from achromatic to chromatic has any adverse impact. Rather, KANAMORI views smoothed values as desirable simply because they have been smoothed. Likewise, in KANAMORI, if a color value is subjected to smoothing to yield a value that does not correspond to achromatic color due to the smoothing, such latter value is stored anyway. KANAMORI again doesn’t recognize that the lack of correspondence to achromatic color has any adverse impact and again views smoothed values as desirable simply because they have been smoothed.

KANAMORI fails to teach or suggest at least the features “comparing a difference between the second color value and the original color value with a limit value” and “adjusting the second color value in line with an achromatic axis of the color space when the difference is greater than the limit value” recited in Claim 1, at least the feature “the correction unit comparing a difference between the second color value and the original color value with a limit value, and adjusting the second color value in line with an achromatic axis of the color space when the difference is greater than the limit value” recited in Claim 10, and at least the feature “the program code for modifying including program code for comparing a difference between the second color value and the original color value with a limit value, and program code for adjusting the second color value in line with an achromatic axis of the color space when the difference is greater than the limit value” recited in Claim 12. There is no suggestion of any “comparing” in KANAMORI, and as noted above, there is no “adjusting the first color value” or “modifying the first color value”, much less any suggestion of “comparing a difference”, and “adjusting the second color value” in the manners variously defined by these respective Claims 1, 10, and 12.

Applicants note that, with respect to a different claim, the Office Action identifies a limit value as being a D value boundary (see page 7 of the Detailed Action). However, Applicants respectfully submit that this is based on a misunderstanding that identifies

such boundary as being the achromatic color axis. Applicants note that the confinement disclosed in KANAMORI is not a step of, component for, or program code for “confining” or “comparing” anything; it is not part of a method, device, or program at all, but rather a statement that conventional color copiers manufactured for general use are simply incapable of printing all colors. The confinement does not occur due to a comparison with any limit value but is rather “due to the practical limitations of the printing system in a color copier, i.e. the range of possible color density values that can be obtained by scanning a wide variety of original color images substantially exceeds the **color** reproduction capabilities of a printing system in a **color** copier manufactured for general use.” (KANAMORI, C8:L5-11, emphasis added).

As noted above, in lines 37-51 of column 10, KANAMORI discloses an embodiment wherein two distinct color correction tables are resident in the color correction table memory section and a one-bit signal is used select between them. However, there is no suggestion that one of the tables includes adjusted smoothed (or modified smoothed) color values and the other table includes original color values, and thus even if one were to assume merely for the sake of argument that the selection could occur as part of some sort of comparison, (which Applicants note is neither taught nor suggested in KANAMORI), there would still be no teaching or suggestion of “a difference between the second color value and the original color value” (as variously recited in the claims) being relevant in any sense.

As described above, nothing in KANAMORI is seen to teach or suggest any of the features of Claims 1, 10, and 12. The authors of KANAMORI to the contrary apparently believe that no benefit would be provided by any further processing over what is disclosed therein because they believe their methodology already provides “a high degree of accuracy that is independent of variable factors such as manufacturing variations in the characteristics of a printing system of the color copier apparatus, amount of non-linearity of the printing systems characteristics, etc.” ((KANAMORI, C2:L15-20).

Applicants therefore respectfully submit that the independent Claims 1, 10, and 12 are patentable over KANAMORI, and since each dependent claim incorporates all features of its respective base claim by dependency, the pending dependent claims are patentable over KANAMORI as well. As such, Applicants respectfully request that the

Examiner withdraw the rejection and indicate the pending claims as allowable at the Examiner's earliest convenience.

Applicants also respectfully reiterate: 1) important claims features were not included or discussed in the rejections, and 2) the prior art rejections were based on the definition of embodiments of the present invention provided in Applicants disclosure rather than on the claims. Applicants respectfully submit that it is improper for a prior art rejection to be based on either 1) or 2), and respectfully note that both are present in the current Office Action. Applicants therefore respectfully submit that the rejections are improper and should be withdrawn.

CONCLUSION

Applicants respectfully submit that all of the claims pending in the application meet the requirements for patentability and respectfully requests that the Examiner indicate the allowance of such claims.

Any amendments to the claims which have been made in this response which have not been specifically noted to overcome a rejection based upon prior art should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Please charge any required fee to Deposit Account Number **502456**.

Should the Examiner have any questions, the Examiner may contact Applicants' representative at the telephone number below.

Respectfully submitted,

October 11, 2007

/Timothy J. Lane/

Date

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FIG. 5

